Patent Claims:

1. A method for stabilizing a car-trailer combination, including a towing vehicle and a trailer moved by the towing vehicle, wherein the towing vehicle is monitored in terms of rolling motions and measures that stabilize driving are taken upon the detection of an actual or expected unstable driving performance of the towing vehicle or the car-trailer combination,
   c h a r a c t e r i z e d by the following steps:
   Determining and evaluating rolling motions with respect to critical or uncritical driving conditions and decelerating the towing vehicle in dependence on the amplitudes of the rolling motions.

2. The method as claimed in claim 1,
   c h a r a c t e r i z e d in that quantities influencing the driving dynamics of the towing vehicle and representative of the amplitudes and/or the frequencies of at least one transverse quantity and/or the vehicle speed are determined, and the rolling motions are evaluated by way of the amplitudes.

3. The method as claimed in claim 2,
   c h a r a c t e r i z e d in that the transverse quantity is determined from the measured yaw velocity and/or the transverse acceleration.

4. The method as claimed in claim 2,
c h a r a c t e r i z e d in that the transverse quantity is determined from the differential value of the measured yaw velocity and the reference yaw velocity.

5. The method as claimed in claim 1 or 2,
c h a r a c t e r i z e d in that changes of the rolling motions over predefined periods are evaluated and the tendencies determined are taken into consideration in the assessment and/or the deceleration of the towing vehicle.

6. The method as claimed in any one of claims 1 to 5,
c h a r a c t e r i z e d by determining a deceleration quantity in response to a predetermined deceleration of the towing vehicle, comparing the deceleration quantity with a model-based deceleration demand and decelerating the towing vehicle according to the result of the comparison.

7. The method as claimed in claim 6,
c h a r a c t e r i z e d in that the deceleration quantity is determined from the rotational behavior of the wheels, with a predefined braking pressure introduced, and the deceleration demand is executed in dependence on the amplitude of the rolling motion and/or the tendency of the rolling motion.

8. The method as claimed in claim 6 or 7,
c h a r a c t e r i z e d in that the deceleration of the towing vehicle is terminated according to criteria which allow a continuous or stepped or immediate transition to non-decelerated driving.

9. The method as claimed in any one of claims 1 to 8, c h a r a c t e r i z e d in that the rotational behavior of the individual vehicle wheels is sensed and evaluated in terms of their slip behavior or locking behavior, in that the pressure requirements are reduced or disabled when the slip behavior or locking behavior of a wheel on a vehicle axle is detected, and the pressure requirements are only enabled again when the tendency to slip or a locked condition is no longer discovered.

10. The method as claimed in claim 9, c h a r a c t e r i z e d in that the pressure requirements on both wheels of a vehicle axle are reduced or disabled when the tendency to slip or a locked condition is discovered on at least one wheel of this vehicle axle.

11. The method as claimed in any one of claims 1 to 10, c h a r a c t e r i z e d in that the quantity of the braking pressure which is introduced into the wheel brakes when a locking behavior of at least one wheel is detected, is stored in a memory when the pressure requirement is disabled.

12. The method as claimed in claim 11, c h a r a c t e r i z e d in that a braking pressure is introduced into the wheel brakes when termination of the locking tendency is detected, which corresponds to the stored quantity of the braking pressure or to a quantity reduced by a value.

13. The method as claimed in claim 11 or 12,
c h a r a c t e r i z e d in that the braking pressure introduced when termination of the locking tendency is recognized, is continuously increased to a braking pressure that leads to the determined deceleration quantity of the towing vehicle.

14. The method as claimed in any one of claims 8 to 13,
c h a r a c t e r i z e d in that the deceleration is terminated at once when a deceleration value of the towing vehicle with the trailer below a threshold value is determined by way of the rotational behavior of the wheels or the longitudinal acceleration of the vehicle.

15. The method as claimed in claim 14,
c h a r a c t e r i z e d in that the determination of the deceleration value is started with time delay after the deceleration intervention and monitored and determined for a predefined interval.

16. The method as claimed in claim 14 or 15,
c h a r a c t e r i z e d in that the vehicle reference speed determined in an ABS control is stored at the commencement of the interval, the vehicle reference speed stored at the commencement is compared with the vehicle reference speed determined at the end, and the deceleration of the vehicle is determined from the difference between the reference speeds and the duration.

17. The method as claimed in any one of claims 1 to 16,

c h a r a c t e r i z e d in that an optical signaling device is activated according to predefined criteria during the deceleration intervention irrespective of an application of the brake pedal.

18. The method as claimed in claim 17,
c h a r a c t e r i z e d in that the optical signaling device is the brake light of the towing vehicle and/or the trailer.

19. The method as claimed in claim 17 or 18,
c h a r a c t e r i z e d in that the signaling device is activated in dependence on a deceleration threshold which must be reached or exceeded.

20. The method as claimed in any one of claims 17 to 19,
c h a r a c t e r i z e d in that the signaling device is activated in dependence on a minimum braking pressure which must be introduced into a wheel.

21. The method as claimed in any one of claims 17 to 20,
c h a r a c t e r i z e d in that a hysteresis is integrated into the deceleration threshold in order to prevent a repeated activation and deactivation of the signaling device if the deceleration demand exceeds or falls below the threshold several times in a predefined period.

22. The method as claimed in any one of claims 1 to 21,
c h a r a c t e r i z e d by a pressure modulation of the braking pressures by means of an electric pressure fluid pump in a dual-circuit braking pressure transmission device,

comprising the steps of introducing a braking pressure into the one and/or the other wheel brake circuit of the one braking pressure transmission circuit, maintaining the braking pressure in the one and/or the other wheel brake circuit of the one braking pressure transmission circuit and reducing the braking pressure in the one and/or the other wheel brake circuit of the one braking pressure transmission circuit, wherein a split-up of the wheel brake circuits (10, 11) of the one braking pressure transmission circuit into a leading and a following wheel brake circuit with different braking pressure requirement is provided, the leading wheel brake circuit (10 or 11) is defined as the wheel brake circuit with a higher braking pressure requirement, and the steps of introducing, maintaining and reducing the braking pressure of the following wheel brake circuit are controlled or regulated by way of the leading wheel brake circuit.

23. The method as claimed in claim 22,
c h a r a c t e r i z e d in that the leading brake circuit (10 or 11) of the wheel brake (30 or 31) is connected to a pressure fluid source (4) by way of opening a switch valve (52), and the pressure fluid is introduced by way of the pressure fluid pump (46) arranged in the wheel brake circuit into the leading and following wheel brake circuit, with braking pressure circuit (8, 9) being isolated from the pressure fluid source by means of a separating valve (6).

23. The method as claimed in claim 22 or 23,
c h a r a c t e r i z e d in that the leading brake circuit (10 or 11) of the wheel brake is connected to a pressure fluid accumulator (50), with the switch valve (52) closed, and the

pressure fluid is introduced by way of the pressure fluid pump (46) arranged in the wheel brake circuit into the leading and following wheel brake circuit, with braking pressure circuit (8, 9) being isolated from pressure fluid source (4) by means of a separating valve (6).

25. The method as claimed in any one of claims 22 to 24, c h a r a c t e r i z e d in that each wheel brake circuit includes an inlet valve and outlet valve (12, 19, 14, 17) and the braking pressure requirement of the leading and following wheel brake circuit is controlled by way of the inlet valve (19) of the following wheel brake circuit, and the pressure fluid delivered by the pressure fluid pump (16) according to the braking pressure requirement is controlled, with the inlet valve (12) of the leading wheel brake circuit open and the outlet valves (14, 17) of the leading and following wheel brake circuit closed.

26. The method as claimed in any one of claims 22 to 25, c h a r a c t e r i z e d in that the braking pressure requirement of the following wheel brake circuit is changed out of the leading wheel brake circuit, with the inlet valve (12 or 19) of the following wheel brake circuit open and the pressure fluid pump active or passive.

27. The method as claimed in any one of claims 22 to 26, c h a r a c t e r i z e d in that the braking pressure of the wheel brake circuits is maintained, with the switch valve, separating valve and outlet valve closed and the inlet valve (12 or 19) of the leading wheel brake circuit open and the

outlet and inlet valve of the following wheel brake circuit closed.

28. A device for stabilizing a car-trailer combination, including a towing vehicle and a trailer moved by the towing vehicle, wherein the towing vehicle is monitored in terms of rolling motions and measures that stabilize driving are taken upon the detection of an actual or expected unstable driving performance of the towing vehicle or the car-trailer combination,
c h a r a c t e r i z e d by an ESP driving stability control with wheel speed sensors and a yaw rate sensor and/or transverse acceleration sensor and/or steering angle sensor for sensing the rotational behavior of the wheels and the yaw velocity and/or the transverse acceleration and/or the steering angle, a vehicle model for determining a model yaw velocity at least from the sensor signals,
a determining unit for producing a differential value from the measured yaw velocity and the model yaw velocity,
a determining unit calculating from the sensor signals and/or model-based quantities a deceleration quantity for the towing vehicle which is provided to the ESP driving stability control for controlling the braking pressure in the wheel brakes.

29. The device as claimed in claim 28,
c h a r a c t e r i z e d in that the determining unit calculates a deceleration quantity for the towing vehicle and/or the trailer in dependence on the amplitudes of the differential value.

30. The device with an optical signaling device as claimed in claim 28 or 29,
c h a r a c t e r i z e d in that the optical signaling device is activated according to predefined criteria during the deceleration intervention irrespective of an application of the brake pedal.

31. The device as claimed in claim 31,
c h a r a c t e r i z e d in that the optical signaling device is the brake light of the towing vehicle and/or the trailer.

32. The device as claimed in claim 30 or 31,
c h a r a c t e r i z e d in that the activation takes place in dependence on a deceleration threshold which must be reached or exceeded in order to activate the signaling device.

33. The device as claimed in any one of claims 30 to 32,
c h a r a c t e r i z e d in that the activation takes place in dependence on a minimum braking pressure which must be introduced into a wheel in order to activate the signaling device.

34. The method as claimed in any one of claims 30 to 33,
c h a r a c t e r i z e d in that a hysteresis is integrated into the deceleration threshold in order to prevent a repeated activation and deactivation of the signaling device when the deceleration demand exceeds or falls below the threshold several times in a predefined period.